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A study on testing reliability of 2013 Musical Aptitude Test scores conducted by Music Education Department in Uludag University

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Abstract

Music Education is among Higher Education programs which accept their students according to their aptitude test scores. The aptitude tests are designed and applied specifically by the institution itself according to the specific needs and expectations of its education policy. Therefore, test contents, test formats, degree of difficulty and assessment criteria may vary accordingly. It is crucial for institutions to evaluate their test and examine its validity and reliability and they have to make the necessary changes when needed in order to sustain a better selection procedure. In accordance with this objective, this paper is an attempt to determine the reliability of the Musical Aptitude Test carried out by Music Education Department of Uludag University in 2013. To calculate the reliability, the Cronbach's Alpha is employed for the first part of the test, which only includes multiple choice questions and for the second part which is based on the performance of candidates, Kendall's W is carried out, since it measures the agreement among raters. The results indicate that the scores of Music Aptitude Test applied in 2013 have a high degree of reliability in terms of both parts of the test.

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Keywords: Music Education; Musical Aptitude Test;Reliability.

1. Introduction

In Turkey the selection of students wishing to study in Higher Education Institutions is administered by the Student Selection and Placement Centre (OSYM). Candidates wishing to make application for programs which accept their students according to their aptitude test scores must have received at least 140 points in an examination administered by OSYM (Ölçme, Seçme ve Yerleştirme Merkezi, 2013).

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Music Education is among Higher Education programs which accept their students according to their aptitude test scores. The aptitude tests are designed and applied specifically by the institution itself according to the specific needs and expectations of its education policy. Thus, test contents, test formats, degree of difficulty and assessment criteria may change in order to meet the specific expectations of the particular institution. It is crucial for institutions to evaluate their test and examine its validity and reliability and they have to make the necessary changes when needed in order to sustain a better selection procedure.

Within this scope, there are some studies published to reveal the status of those selection procedures. In his PhD dissertation, Tarman (2002) assessed and evaluated the Musical Aptitude Exam for entrance to the Gazi University, Department of Music Education in terms of validity and reliability. Tarman indicated that Musical Aptitude Exams in Gazi University had low validity but high reliability. In another study, Ece and Kaplan (2008) calculated the coefficient of concordance and found that interrater reliability of Musical Aptitude Exam in Abant Izzet Baysal University was very high.

In a study which evaluates the 2001 Musical Aptitude Test of Uludag University, Demirbatır (2004), analyzed the scores of multiple-choiced part of the test and compared the scores with aural perception based second part of the test. Results showed that the test in 2001 had high validity and reliability.

Studies concerning aptitude tests' validity and reliability ensure a better qualified selection. In accordance with this objective, this paper attempts to determine the reliability of the Musical Aptitude Test done by Music Education Department of Uludag University in 2013

The Musical Aptitude Test that is used in Music Education BA program in Uludag University consists of two parts. The first part aims to determine the readiness level of the candidates in terms of music theory and ear training and serves as an elimination exam. The second part of the exam, on the other hand, intends to evaluate the musical talents of instrument and voice, and is used as a selection exam (Uludag University [UU], 2013).

2. Method

2.1. Context and participants

In 2013, 282 candidates participated in Music Aptitude Test. Top 120 of them were eligible to take the second part of the test. In the first part of the test, 282 were asked to answer 40 multiple choice questions. The mean of correct answers for Music Aptitude Test Part I was 22.04 (SD = 7.01). In Part II, each of 120 candidates were taken to Musical Hearing, Instrumental Performance, and Singing Performance tests. Mean scores (out of 100) were respectively 52.25 (SD = 14.65), 70.51 (SD = 21.66), and 63.74 (SD = 13.47)

Table 1. Statistics of scores in Music Aptitude Test Part I and Part II (Musical Hearing, Instrumental Performance and Singing Performance)

	N	Mean	Std. Dev.	Variance	Skewness	Kurtosis
Part I	282	22.04	7.01	49.16	.035	-.420
Musical Hearing	120	52,25	14,65	214.55	.062	-.347
Instrumental Performance	120	70.51	21.66	469.13	-.260	-.901
Singing Performance	120	63.74	13.47	181.42	-.047	-,181

Table 1 displays the values concerning candidate numbers, means, standard deviations, variances, skewness and kurtosis of the Music Aptitude Test. Values about Musical Hearing, Instrumental Performance and Singing Performance are calculated out of 100 points whereas the values of Part I are based on correct answers.

2.2. Data collection and analysis procedures

First part of 2013 Musical Aptitude Test consisted of 40 multiple choice questions. Each items were dichotomously scored [0,1].

On Calculating reliability coefficients of measurements done by using multiple choice tests in which wrong answers have no effect on scores provided by correct answers, generally using Kuder-Richardson's formula referred to as Kr-20 is recommended (Can, 2013). Bademci (2011) states that in conditions where items scored dichotomously [0,1], KR-20 and Cronbach's alpha give the same results. In this study, since there is no module for KR-20 in SPSS, Cronbach's alpha is employed to calculate the reliability of the first part of musical aptitude test.

In the second part of aptitude test, each of 120 candidates who got the highest scores in the first part were taken to Musical Hearing, Instrumental Performance and Singing Performance tests. In the study, to measure the reliability of the second part's scores, it is deemed appropriate to determine the concordance between the scores given by the members of the commissions. Kendall's coefficient of concordance (Kendall's W) is a rank-based nonparametric test used to evaluate the concordance between more than two raters (Can, 2013). Dealing with ranks formed by raters' scores, Kendall's W is carried out to determine the reliability of second part of aptitude test.

For scores' reliability of both parts of Aptitude Test, data analysis was performed by the use of SPSS Version 22.0.

3. Results and Discussion

Findings concerning the reliability of Music Aptitude Test Scores are analyzed under two subtitles: reliability of scores in Music Aptitude Test Part I and reliability of scores in Music Aptitude Test Part II.

3.1. Reliability of Scores in Music Aptitude Test Part I

In determining the internal consistency, George and Malley (2003) state that even though it is impossible to indicate the exact limits of acceptable alpha values, generally values are considered as follows: 0.9-1 excellent, 0.8-0.9 good, 0.7-0.8 acceptable, 0.6-.07 questionable, 0.5-0.6 poor. And reported value of less than 0.5 can be interpreted as Unacceptable.

For the scores in Part I which consists of 40 multiple choice questions, Cronbach's Alpha is employed and following findings are obtained.

Table 2. Cronbach's alpha for Music Aptitude Test Part I

	N	Mean	Std. Dev.	Variance	α
Music Aptitude Test Part I	40	22.04	7.01	49.16	.843

As shown in table 2, Cronbach's alpha for Music Aptitude Test Part I is .843 (M = 22.04, SD = 7.01). Accordingly, Music Aptitude Test Part I scores can be interpreted as highly reliable.

3.2. Reliability of Scores in Music Aptitude Test Part II

Kendall's coefficient of concordance (Kendall's W) varies between 0 and 1. The greater the concordance between interraters, the closer the W is to 1 (Can, 2013).

In light of this information, for determining the reliability of Music Aptitude Test Part II scores, agreement among raters is assessed using Kendall's coefficient of concordance.

Kendall's W is calculated for each Musical Hearing, Instrumental Performance and Singing Performance tests which constitute the second part of the Music Aptitude Test.

Table 3. Kendall's W for Musical Hearing Test

	N	*W*	*df*	*P*
Two-Voice	3	.955	119	.000
Three-Voice	3	.971	119	.000
Four-Voice	3	.962	119	.000
Melody	3	.894	119	.000
Rhythm	3	.910	119	.000
Sight Reading	3	.933	119	.000
Musical Hearing Test (Overall)	3	.979	119	.000

Table 3 displays the Kendal's W values for 120 candidates' scores given by Musical Hearing Test Commission consists of 3 raters.

Accordingly, each "Two-Voice" (w = 0,955), "Three Voice" (w =0,971), "Four Voice" (w = 0,962), "Melody" (w = 0,894), "Rhythm" (w = 0,910), "Sight Reading" (w = 0,933) parts of Musical Hearing Test scores are found highly reliable. It is seen that Musical Hearing Test (Overall) is highly reliable (w = 0,979 p<0,01).

Table 4. Kendall's W for Instrumental Performance

	N	*W*	*df*	*p*
Technique	6	.828	119	.000
Level	6	.860	119	.000
Accuracy	6	.873	119	.000
Interpretation	6	.787	119	.000
Sight Reading	6	.734	119	.000
Instrumental Performance Test (Overall)	6	.987	119	.000

Table 4 displays the Kendal's W values for 120 candidates' scores given by Instrumental Performance Test Commission consists of 6 raters.

Accordingly, each "Technique" (w = 0,828), "Level" (w =0,860), "Accuracy" (w =0,873), "Interpretation" (w = 0,784), "Sight Reading" (w = 0,734) parts of Musical Hearing Test scores are found highly reliable. It is seen that Instrumental Performance Test (Overall) is highly reliable (w = 0,987 p<0,01).

Table 5. Kendall's W for Singing Performance

	N	*W*	*df*	*p*
Accuracy	3	.880	119	.000
Voice Health	3	.810	119	.000
Rotundity	3	.836	119	.000
Range	3	.884	119	.000
Interpretation	3	.812	119	.000
Singing Performance Test (Overall)	3	.966	119	.000

Table 5 displays the Kendall's W values for 120 candidates' scores given by Singing Performance Test Commission consists of 3 raters.

Accordingly, each "Accuracy" (w = 0,880), "Voice Health" (w = 0,810), "Rotundity" (w = 0,836), "Range" (w = 0,884), "Interpretation" (w = 0,812) parts of Musical Hearing Test scores are found highly reliable. It is seen that Singing Performance Test (Overall) is highly reliable (w = 0,966 p<0,01).

4. Conclusion

In 2013, 282 candidates participated in Music Aptitude Test. Top 120 of them were eligible to attend the second part of the test. First part of 2013 Musical Aptitude Test consisted of 40 multiple choice questions. Cronbach's alpha for Music Aptitude Test Part I is .843 (M = 22.04, SD = 7.01). Accordingly, Music Aptitude Test Part I scores can be interpreted as highly reliable. In the second part of aptitude test, candidates were taken to Musical Hearing, Instrumental Performance and Singing Performance tests. Kendall's W is calculated for each tests.

Accordingly, both Musical Hearing Test (w = 0,979 p<0,01), Singing Performance Test (w = 0,966 p<0,01) and Instrumental Performance Test scores (w = 0,987 p<0,01) are highly reliable.

The results indicate that the scores of Music Aptitude Test applied in 2013 have a high degree of reliability in terms of both parts of the test.

This study was an attempt to examine the reliability of Music Aptitude Test scores. To determine the necessary changes in order to sustain a better selection procedure, increasing the number of studies concerning aptitude tests' validity and reliability is considered to be essential.

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